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IN THE UNITED STATES PATENT & TRADEMARK OFFICE

IN RE APPLICATION OF	:	
KLAUS-PETER JONDERKO, ET AL.	:	EXAMINER: SERGENT, RABON
SERIAL NO: 09/963,423	:	
FILED: SEPTEMBER 27, 2001	:	GROUP ART UNIT: 1711
FOR: PULVERULENT, WATER-DISPERSIBLE, BLOCKED POLYISOCYANATE ADDUCTS, A PROCESS FOR THE PREPARATION AND THEIR USE	:	

APPEAL BRIEF

COMMISSIONER FOR PATENTS
ALEXANDRIA, VA 22313

SIR:

This is an appeal of the Final Rejection dated November 20, 2003 of Claims 2-11, 13-21, 25 and 27-28. A Notice of Appeal, along with a petition for a one-month extension of time, is **submitted herewith**.

I. REAL PARTY IN INTEREST

The real party in interest in this appeal is Degussa AG having an address Standort Marl, Bau 1042-PB 15, D-45764 Marl, Fed. Rep. Germany.

II. RELATED APPEALS AND INTERFERENCES

Appellants, Appellants' legal representative and the assignee are aware of no appeals or interferences which will directly affect or be directly affected by or have a bearing on the Board's decision in this appeal.

III. STATUS OF THE CLAIMS

Claims 2-11, 13-21, 25 and 27-28 stand rejected and are herein appealed. Claims 22-24, the remaining claims in the application, stand withdrawn as being directed to a non-elected invention.

IV. STATUS OF THE AMENDMENTS

An amendment under 37 CFR 1.116 was timely filed on February 12, 2004. In an Advisory Action entered February 25, 2004, the Examiner indicated that upon the filing of an appeal, the amendment will be entered. The attached Appendix I reflects Claims 2-11, 13-21, 25 and 27-28 as amended by the above-referenced amendment under 37 CFR 1.116.

V. SUMMARY OF THE INVENTION

The claimed invention, as recited in independent Claim 2, is a solid, pulverulent, water-dispersible, blocked polyisocyanate adduct having particle diameters of from about 1 to 1000 μm, obtained by reacting, in a water-free, organic auxiliary solvent,

at least one isocyanate component selected from the group consisting of aliphatic, cycloaliphatic and aromatic isocyanates, wherein said isocyanate has an average NCO functionality of 2-4

with

at least one hydrophilicizing component containing at least one group which is reactive toward the NCO groups, in an amount such that there is on average not more than one NCO-reactive function for each isocyanate molecule;

blocking with at least one blocking agent from 95 to 100% of the NCO groups not reacting with the hydrophilicizing component;

optionally neutralizing with at least one neutralizing agent; and

removing the organic auxiliary solvent.

The claimed invention, as recited in independent Claim 25, is also a process for the water-free preparation of a solid, pulverulent, water-dispersible, blocked polyisocyanate adduct having particle diameters of from about 1 to 1000 μm, comprising:

reacting, in an organic auxiliary solvent,

at least one isocyanate component selected from the group consisting of aliphatic, cycloaliphatic and aromatic isocyanates, wherein said isocyanate has an average NCO functionality of 2-4

with

at least one hydrophilicizing component containing at least one group which is reactive toward the NCO groups, in an amount such that there is on average not more than one NCO-reactive function for each isocyanate molecule;

blocking with at least one blocking agent from 95 to 100% of the NCO groups not reacting with the hydrophilicizing component;

optionally neutralizing with at least one neutralizing agent; and

removing the organic auxiliary solvent.

See paragraphs [0034] – [0045].

VI. ISSUES

(A) Whether Claims 2-11, 13-20, 25, 27 and 28 are anticipated under 35 U.S.C. § 102(b) by either one of U.S. 5,508,370 (Reiff et al '370), U.S. 5,693,737 (Reiff et al '737), or U.S. 5,607,482 (Reiff et al '482)?[1]

(B) Whether Claim 21 is unpatentable under 35 U.S.C. § 103(a) over any of the Reiff et al patents, further in view of U.S. 6,096,805 (Lange et al)?

(C) Whether Claims 2-11, 13-21, 25, 27 and 28 are unpatentable under 35 U.S.C. § 112, first paragraph?

VII. GROUPING OF THE CLAIMS

For Issue (A) above, Claim 25 stands or falls separately from Claim 2.

VIII. ARGUMENT

Issue (A)

Claims 2-11, 13-20, 25, 27 and 28 stand rejected under 35 U.S.C. § 102(b) as anticipated by either one Reiff et al '370, Reiff et al '737, or Reiff et al '482. That rejection is untenable and should not be sustained.

The claimed invention provides a solid, which is stable during storage and which can be dispersed in water without the use of additional solvents or low-viscosity polyethers. In contrast to the conventional dispersions, the present invention affords virtually unrestricted storage stability, it desirably reduces transport costs because it avoids the need to transport the unreacted component water, and the end user can desirably formulate the solids content and required spray viscosity on an individual basis. Nowhere is either the present invention

[1] As Reiff et al '737 is a divisional application of Reiff et al '370, and thus has the same disclosure, discussion in the text will be with respect to Reiff et al '370 only. The term "the Reiff et al patents" is used in the text when an argument applies to any of them.

or its attendant advantages disclosed or suggested in the prior art, and the claims are thus believed to present patentable subject matter, as now discussed.

Reiff et al '370 discloses blocked polyisocyanates having molecular weights of 800 to 500g/mol, an NCO functionality of 2.2-4.5, and an NCO content of 5-20%. These hydrophilic blocked polyisocyanates are processed directly to the corresponding dispersions using either auxiliary solvents or low-viscosity polyethers. Solid, blocked, water-dispersible polyisocyanates are not disclosed.

In Reiff et al '482, the hydrophilic blocked polyisocyanates are processed directly to the corresponding dispersions. Again, auxiliary solvents or low-viscosity polyethers are required, and solid blocked polyisocyanates are not disclosed or suggested.

The Examiner continues to find that the above Reiff et al patents disclose an embodiment of their invention wherein the blocked isocyanate adduct is solid and may be dispersed simply by adding the adduct to water.

In reply, the Reiff et al patents neither disclose nor suggest the presently-claimed **pulverulent** materials. Nor is there any disclosure or suggestion in the Reiff et al patents that their hydrophilic blocked polyisocyanates are of a type obtained in the presence of a water-free, organic auxiliary solvent.

In the Final Office Action, the Examiner finds that even in the form of a dispersion, the disclosed blocked polyisocyanate adduct of the Reiff et al patents are in the form of discrete particles. The Examiner cites column 12, line 10 of Reiff et al '737.

In reply, said passage in Reiff et al '737 describes an average diameter of 50 to 500 mμ. However, "mμ" means millimicrons, which is the same as nanometers. In other words, the average diameter is .05 to 0.5 μm, or below the presently-recited minimum of 1 μm. In addition, Reiff et al '737 discloses a preference of 100 to 300 mμ (column 12, lines 12-13), and thus actually teaches away from the presently-recited minimum particle diameter. The

other Reiff et al patents also disclose the same preference for average diameter. See column 12, lines 12-13 of Reiff et al '370 and column 10, lines 50-51 of Reiff et al '482.

Claim 25 is separately patentable, since none of the Reiff et al patents disclose or suggest a process for the water-free preparation of a solid, pulverulent, water-dispersible, blocked polyisocyanate adduct having particle diameters of from about 1 to 1000 μm, comprising reacting, in an organic auxiliary solvent, at least one isocyanate component selected from the group consisting of aliphatic, cycloaliphatic and aromatic isocyanates, wherein said isocyanate has an average NCO functionality of 2-4, with at least one hydrophilicizing component containing at least one group which is reactive toward the NCO groups, in an amount such that there is on average not more than one NCO-reactive function for each isocyanate molecule; blocking with at least one blocking agent from 95 to 100% of the NCO groups not reacting with the hydrophilicizing component; optionally neutralizing with at least one neutralizing agent; and removing the organic auxiliary solvent.

In the Advisory Action, the Examiner finds that the term "about 1 [μm]" (which is synonymous with "about 1000 mμ") in the claims encompasses particle sizes, in effect, below 1000 mμ, and that the particle sizes of the Reiff et al patents are not confined to 50 to 500 mμ, pointing to Reiff et al '482 which discloses a range end point of 800 mμ at column 10, line 51. The Examiner finds that this end point "in and of itself" is considered to be encompassed by the claims. The Examiner further finds that the Reiff et al patents "do not require that the particles fall within the recited ranges; rather, the particle diameter is defined as the diameter at which 50% of the particles are above, and 50% of the particles are below" and therefore, "it is reasonable to conclude that approximately 50% of the particles have a particle size that meets the claimed range.

In reply, the term "about" would never be construed to include values that differ by as much as 20% from the stated value. In other words, "about 1 μm" (which is the same as

"about 1000 mμ"), would never be construed to include 800 mμ, which is 20% less than 1000 mμ. Moreover, as discussed above, the Reiff et al patents disclose 300 mμ as preferable, and thus teach away from the presently-recited minimum. In addition, while the definition of average particle diameter in the Reiff et al patents allow for 50% of the particles to be above the disclosed range, nevertheless, the Examiner can no more than speculate that any of these particle diameters are at least 1000 mμ, even if above 800 mμ. Nor would the broadest reasonable interpretation, consistent with the specification, of the present claims, include an embodiment wherein 50% of the particles have particle diameters below the recited range of about 1 to 1000 μm.

For all the above reasons, it is respectfully requested that the above rejection be REVERSED.

Issue (B)

Claim 21 stands rejected under 35 U.S.C. § 103(a) as unpatentable over any of the Reiff et al patents, further in view of Lange et al. That rejection is untenable and should not be sustained.

Lange et al does not remedy any of the above-discussed deficiencies of the Reiff et al patents. The Examiner relies on Lange et al for a disclosure of combining hydrophobic blocked polyisocyanates with hydrophilic blocked isocyanates. Nevertheless, even if hydrophobic blocked isocyanates were combined with the blocked polyisocyanates of the Reiff et al patents, the result would still not be the presently-claimed invention.

For all the above reasons, it is respectfully requested that the above rejection be REVERSED.

Issue (C)

Claims 2-11, 13-21, 25, 27 and 28 stand rejected as unpatentable under 35 U.S.C. § 112, first paragraph. That rejection is untenable and should not be sustained.

The Examiner holds that the disclosure is enabling only for particular percentage ranges, as disclosed for the respective reactants. In reply, Examples 1 and 2 clearly describe how one skilled in the art would be able to make the presently-claimed solid, pulverulent, water-dispersible, blocked polyisocyanate adduct without limitation as to particular percentage ranges. Indeed, the description at paragraphs [0020] through [0029] and [0036] through [0044] is ample description of how to make the **presently-claimed** invention.

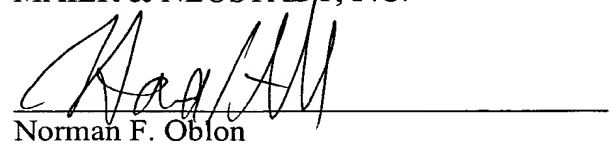
For all the above reasons, it is respectfully requested that the above rejection be REVERSED.

IX. CONCLUSION

For the above reasons, it is respectfully requested that all the rejections still pending in the Final Office Action be REVERSED.

Respectfully submitted,

OBLON, SPIVAK, McCLELLAND,
MAIER & NEUSTADT, P.C.



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APPENDIX

CLAIMS ON APPEAL

Claim 2. A solid, pulverulent, water-dispersible, blocked polyisocyanate adduct having particle diameters of from about 1 to 1000 μm, obtained by reacting, in a water-free, organic auxiliary solvent,

at least one isocyanate component selected from the group consisting of aliphatic, cycloaliphatic and aromatic isocyanates, wherein said isocyanate has an average NCO functionality of 2-4

with

at least one hydrophilicizing component containing at least one group which is reactive toward the NCO groups, in an amount such that there is on average not more than one NCO-reactive function for each isocyanate molecule;

blocking with at least one blocking agent from 95 to 100% of the NCO groups not reacting with the hydrophilicizing component;

optionally neutralizing with at least one neutralizing agent; and

removing the organic auxiliary solvent.

Claim 3. The blocked polyisocyanate adduct of claim 2, wherein the isocyanate component is at least one diisocyanate selected from the group consisting of 1,6-diisocyanatohexane (HDI), bis(4-isocyanatocyclohexyl)methane (HMDI), 1,5-diisocyanato-2-methylpentane (MPDI), 1,6-diisocyanato-2,4,4-trimethylhexane (TMDI) and 3-isocyanatomethyl-3,5,5-trimethylcyclohexyl isocyanate (IPDI).

Claim 4. The blocked polyisocyanate adduct of claim 3, wherein the diisocyanates have at least two isocyanate groups per molecule.

Claim 5. The blocked polyisocyanate adduct of claim 3, wherein the diisocyanate compound is prepared by trimerizing, allophanatizing, biuretizing or urethanizing the diisocyanates.

Claim 6. The blocked polyisocyanate adduct of claim 2, wherein the isocyanate is a product of at least one diisocyanate selected from the group consisting of 1,6-diisocyanatohexane (HDI), bis(4-isocyanatocyclohexyl)methane (HMDI), 1,5-diisocyanato-2-methylpentane (MPDI), 1,6-diisocyanato-2,4,4-trimethylhexane (TMDI) and 3-isocyanatomethyl-3,5,5-trimethylcyclohexyl isocyanate (IPDI) and at least one compound selected from the group consisting of polyol and polyamine.

Claim 7. The polyisocyanate adduct of claim 2, wherein the isocyanate is at least one isocyanate selected from the group consisting of IPDI and IPDI isocyanurate.

Claim 8. The polyisocyanate adduct of claim 2, wherein the isocyanate is at least one isocyanate selected from the group consisting of tetramethylenexylylene diisocyanate (TMXDI), 2,4-diisocyanatotoluene and its technical mixtures with 2,6-diisocyanatotoluene and 4,4'-diisocyanatodiphenylmethane and its technical mixtures with 2,4'-diisocyanatodiphenylmethane.

Claim 9. The polyisocyanate adduct of claim 2, wherein the hydrophilicizing component is an ionic component selected from the group consisting of

monohydroxyalkylcarboxylic acids, polyhydroxyalkylcarboxylic acids, monohydroxyalkyl sulfonic acids, polyhydroxyalkylsulfonic acids, monohydroxyalkyl phosphonic acids, polyhydroxyalkylphosphonic acids, monofunctional aminocarboxylic acids, and polyfunctional aminocarboxylic acids.

Claim 10. The blocked polyisocyanate adduct of claim 2, wherein the hydrophilicizing component is a nonionic hydrophilicizing agent having at least one terminal hydroxyl group.

Claim 11. The blocked polyisocyanate adduct of claim 10, wherein the nonionic hydrophilicizing agent is selected from the group consisting of polyether containing 80-100% by weight of ethylene oxide units, based on the weight of the polyether, and polyether containing 80-100% by weight of propylene oxide units, based on the weight of the polyether.

Claim 13. The blocked polyisocyanate adduct of claim 2, wherein the blocking agent is at least one agent selected from the group consisting of monofunctional alcohols, polyfunctional alcohols, phenols, oximes, CH-acidic compounds, NH-acidic compounds, glycol monoethers and amino alcohols.

Claim 14. The blocked polyisocyanate adduct of claim 13, wherein the blocking agent is at least one agent selected from the group consisting of caprolactam, diethylethanolamine, diisopropylamine, dialkyl malonates, acetone oxime, acetophenone oxime, methyl ethyl ketone oxime, triazole and dimethylpyrazole.

Claim 15. The blocked polyisocyanate adduct of claim 2, wherein said neutralizing agent is present in an amount greater than 0% by weight, based on the weight of the adduct.

Claim 16. The blocked polyisocyanate adduct of claim 15, wherein the neutralizing agent is capable of forming salts.

Claim 17. The blocked polyisocyanate adduct of claim 16, wherein the neutralizing agent is an agent selected from the group consisting of organic acids, inorganic acids, organic bases, and inorganic bases.

Claim 18. The blocked polyisocyanate adduct of claim 17, wherein the base used as a neutralizing agent is selected from the group consisting of ammonia, amines and amino alcohols.

Claim 19. The blocked polyisocyanate adduct of claim 17, wherein the acid used as a neutralizing agent is selected from the group consisting of formic, acetic, lactic and benzoic acid.

Claim 20. The blocked polyisocyanate adduct of claim 17, wherein the degree of neutralization of the neutralizing agent is 0.5 -1.0.

Claim 21. The blocked polyisocyanate adduct of claim 2, wherein said adduct further comprises admixed hydrophobic blocked isocyanates.

Claim 25. A process for the water-free preparation of a solid, pulverulent, water-dispersible, blocked polyisocyanate adduct having particle diameters of from about 1 to 1000 μm, comprising:

reacting, in an organic auxiliary solvent,

at least one isocyanate component selected from the group consisting of aliphatic, cycloaliphatic and aromatic isocyanates, wherein said isocyanate has an average NCO functionality of 2-4

with

at least one hydrophilicizing component containing at least one group which is reactive toward the NCO groups, in an amount such that there is on average not more than one NCO-reactive function for each isocyanate molecule;

blocking with at least one blocking agent from 95 to 100% of the NCO groups not reacting with the hydrophilicizing component;

optionally neutralizing with at least one neutralizing agent; and

removing the organic auxiliary solvent.

Claim 27. The blocked polyisocyanate adduct of claim 2, wherein the particle diameters are from 1 to 300 μm.

Claim 28. The process of claim 25, wherein the particle diameters are from 1 to 300 μm.